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If now we take* the Proper Motion values assigned by Prof. Auwers, viz.:—in R.A. $+0^{s}{\cdot}0022$ and in Decl. $-0''{\cdot}167$, and starting from the epoch 1867·54 compute the present values of P. and D. on the assumption that the companion does not share in the motion of the principal star, we get P = 321°·72, D = 4″·428. A comparison of these numbers with my latest measures points distinctly to the conclusion that a physical connection subsists between the objects. The series of measures as a whole appears further to indicate a slight but decided decrease in the angle of position of the companion in nineteen years, while no change would seem to have taken place in the distance.

Knowles Lodge, Cuckfield: 1886, *November* 10.

On the Orbit of Σ 1757. By J. E. Gore.

I have computed the orbit of this binary star, by means of the graphical method, and find the following provisional elements:

Elements of Σ 1757.

P = 340·38 years.
T = 1778·81.
e = 0·2425.
γ = 45° 51′.
☊ = 89° 45′.
λ = 203° 14′.
a = 2″·25.
μ = + 1°·057.

The following is a comparison between the recorded observations, and the positions computed from the above elements:

Epoch.	Observer.	θ_o	θ_c	$\theta_o - \theta_c$	ρ_o	ρ_c	$\rho_o - \rho_c$
		°	°	°	″	″	″
1825·37	Struve	10·0	10·75	−0·75	1·60	1·38	+0·2
1829·82	,,	19·5	18·55	+0·95	1·44	1·45	−0·0
1832·39	Smyth	24·1	23·0	+1·10	1·5	1·49	+0·01
1833·38	Struve	23·9	24·6	−0·70	1·54	1·50	+0·04
1835·37	,,	25·5	27·6	−2·10	1·66	1·53	+0·13
1836·42	,,	29·4	29·1	+0·30	1·64	1·54	+0·10
1838·48	Smyth	31·0	32·1	−1·10	1·7	1·60	+0·10
1841·38	Mädler	36·0	36·1	−0·10	1·74	1·63	+0·11
1842·39	Dawes	37·4	37·4	0·00	1·67	1·66	+0·01
1842·52	Smyth	37·9	37·5	+0·40	1·7	1·66	+0·04
1843·45	Dawes	38·8	38·75	+0·05	—	1·69	—
1843·51	Kaiser	40·9	38·8	+2·10	—	1·69	—
1844·72	O. Struve	43·7	40·2	+3·50	1·89	1·71	+0·18
1845·88	Mädler	40·8	41·7	−0·90	2·02	1·74	+0·28

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* I am indebted for these numbers to Mr. Hind.

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Epoch.	Observer.	θ_o	θ_c	$\theta_o-\theta_c$	ρ_o	ρ_c	$\rho_o-\rho_c$
		°	°	°	″	″	″
1850·38	O. Struve	48·8	46·8	+2·00	1·85	1·82	+0·03
1852·38	Smyth	51·7	48·9	+2·80	2·0	1·88	+0·12
1853·09	Mädler	52·2	49·6	+2·60	2·05	1·89	+0·16
1853·73	Jacob	48·0	50·25	−2·25	2·14	1·89	+0·25
1854·37	Mädler	50·1	50·85	−0·75	2·16	1·90	+0·26
1855·31	,,	51·3	51·8	−0·5	1·7	1·93	−0·23
1856·32	,,	51·8	52·75	−0·95	1·5	1·95	−0·45
1856·42	Morton	51·9	52·85	−0·95	2·01	1·95	+0·06
1856·88	Secchi	52·9	53·35	−0·45	1·84	1·95	−0·11
1857·29	Morton	54·2	53·7	+0·5	2·00	1·97	+0·03
1858·08	Jacob	52·8	54·45	−1·65	1·76	1·98	−0·22
1858·37	Mädler	54·7	54·6	+0·1	1·91	1·98	−0·07
1859·36	,,	53·7	55·5	−1·8	1·82	2·02	−0·20
1860·34	Dawes	54·3	56·4	−2·1	2·31	2·03	+0·28
1860·35	,,	53·4	56·4	−3·00	2·08	2·03	+0·05
1863·32	Dembowski	59·0	58·96	+0·04	2·01	2·09	−0·08
1865·97	,,	60·4	61·0	−0·6	2·09	2·13	−0·04
1866·01	O. Struve	60·8	61·03	−0·23	2·34	2·14	+0·20
1867·27	Talmage	63·7	62·1	+1·6	2·60	2·16	+0·44
1868·30	Dembowski	62·7	62·8	−0·1	2·04	2·18	−0·14
1869·22	Brünnow	63·4	63·53	−0·13	2·59	2·20	+0·39
1869·24	Talmage	64·3	63·53	+0·77	—	2·20	—
1870·15	Dembowski	63·5	64·2	−0·7	2·03	2·22	−0·19
1870·37	Talmage	64·1	64·3	−0·2	2·00	2·22	−0·22
1871·19	Dembowski	63·4	64·9	−1·5	2·13	2·24	−0·11
1872·33	Wilson & Seabroke	64·8	65·7	−0·9	2·30	2·25	+0·05
1872·37	Talmage	67·3	65·73	+1·57	—	2·25	—
1873·23	Wilson & Seabroke	64·0	66·45	−2·45	2·05	2·27	−0·22
1873·35	,, ,,	65·0	66·53	−1·53	2·00	2·27	−0·27
1874·32	,, ,,	65·5	67·25	−1·75	2·15	2·28	−0·13
1874·32	Talmage	69·8	67·25	+2·55	(1·08)?	2·28	(−1·20)?
1874·41	Wilson & Seabroke	64·2	67·31	−3·11	2·16	2·28	−0·12
1875·31	Schiaparelli	66·6	67·8	−1·2	2·00	2·29	−0·29
1876·36	Wilson & Seabroke	67·2	68·45	−1·25	2·15	2·30	−0·15
1876·41	,, ,,	66·5	68·48	−1·98	2·21	2·30	−0·09
1879·40	Hall	68·9	70·5	−1·60	2·33	2·35	−0·02
1879·470	Schiaparelli	67·98	70·5	−2·52	2·462	2·35	+0·112
1882·467	,,	69·38	72·43	−3·05	2·314	2·42	−0·106
1883·21	Engelmann	70·44	72·8	−2·36	2·623	2·43	+0·193

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The formulæ for calculation of an ephemeris are as follows:

$$(1)\quad u - 13{\cdot}89 \sin u = +1^{\circ}{\cdot}057\,(t - 1778{\cdot}81),$$

$$(2)\quad \tan \tfrac{1}{2}\mathrm{V} = 1{\cdot}28 \tan \tfrac{1}{2}u,$$

$$(3)\quad \tan\,(\theta_c - 89^{\circ}\,45') = 0{\cdot}6965 \tan\,(\mathrm{V} + 203^{\circ}\,14').$$

$$(4)\quad \rho = 2''{\cdot}25\,(1 - 0{\cdot}2425 \cos u)\,\frac{\cos\,(\mathrm{V} + 203^{\circ}\,14')}{\cos\,(\theta_c - 89^{\circ}\,45')};$$

where u is the eccentric anomaly, and V the true anomaly for the epoch t, θ_c the required position angle, and ρ the distance.

The position of the star is for 1886·0

R.A. $13^{h}\ 28^{m}\ 29^{s}$
$+0^{\circ}\ 16'\ 6''$.

It is Lalande 25087, and lies closely *np ζ Virginis*. It was estimated 7^{m} by Lalande, and 7·0 at Cordoba. According to Struve the magnitudes of the components are 7·8 and 8·9.

The orbit has been previously computed by Casey, who finds a period of 401·0 years, with T = 1797·42, and e = 0·5079.

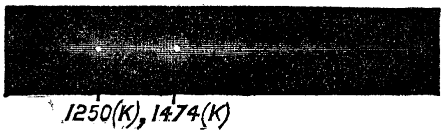
Ballysodare, Co. Sligo:
1886, *Oct.* 14.

Reply to certain Questions raised before the Royal Astronomical Society at the Meeting on 1886, *March* 12, *concerning the matter detailed in a Paper entitled "Bright Lines in Stellar Spectra."*

By O. T. Sherman.

(*Communicated by the Secretaries.*)

The object of the method employed is to render the image of the bright line light as broad and intense as may be, and the intensity of the background light a minimum. A successful application is presented in the spectrum of *Nova Andromedæ*, which is shown in an adjoining cut.* Along a faint bluish line there were seen bright stellar images surrounded by a haze. These were termed bright lines.



Portion of the Spectrum of Nova Andromedæ.

In practice the background light is often sufficiently intense

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* The haze surrounding the stellar image is somewhat exaggerated in the drawing.